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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,896	04/21/2005	Yasufumi Asao	03500.017697.	5799

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EXAMINER	
JOSEPH, DENNIS P	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
03/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,896	ASAO ET AL.	
	Examiner	Art Unit	
	DENNIS P. JOSEPH	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,7-9 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,7-9 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to amendments for No. 10/531,896 filed on February 12, 2010. Claims 1, 4, 5 and 7-9 and 21 are pending and have been examined.

Continued Examination

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 12, 2010 has been entered.

Claim Rejections – 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1, 4, 5 and 7-9 and 21** rejected under 35 U.S.C. 103(a) as being unpatentable over Struyk (US 2003/0128218 A1) in view of Abileah et al. (US 5,499,126)

Struyk teaches in Claim 1:

A color display element comprising a unit pixel which is comprised of a plurality of sub-pixels comprising a first sub-pixel and a second sub-pixel **([0042]-[0044] disclose sub-pixel structures which are composed of different colors and the color variances within each pixel)**, the second sub-pixel having a green color filter **([0042], [0084] and [0085] disclose green color filters)** and modulated in accordance with a voltage being located in each of the sub-pixels **(Figures 3A, 3B and 4 and [0063]-[0065] disclose the voltage applied to each of the colors within the pixel. The application of voltages to the sub-pixels is respectfully, obvious)**,

wherein the color display element has a means of applying a voltage to each of the sub-pixels **(As for the application of voltages (changing of them) to the sub-pixels, this is respectfully obvious)**, and

modulated in accordance with a voltage applied to the first sub-pixel in a range within which a brightness of light passing through the medium is variable **(As discussed above, various voltage levels are applied to each of the sub-pixels and by doing so, the optical property, i.e. color intensity, is modulated or changed. This is well known in the art and as a result, the brightness is altered. [0118] discloses green/magenta filter pairs (read magenta color filter as the first sub-pixel) and these colors are complementary. As for the application of voltages to the sub-pixels (changing of them), this is respectfully obvious)**

the second sub-pixel is modulated in accordance with a voltage applied to the second sub-pixel in a range within which a brightness of light passing through is variable **(Figures 3A, 3B and 4 and [0063]-[0065] disclose the voltage applied to each of the colors within the pixel. The language "variable" is broad and varying amount of voltage applied would change the color intensity. As noted above, the modulation of voltages (changing of them) is obvious)**; but

Struyk does not explicitly teach "and in a range within which a chromatic color assumed by light passing through the liquid crystal layer changes within red and blue."

However, chromaticity relationships between RGB colors is well known in the art and the relationship is shown by chromaticity diagrams. The color combinations are altered as one of the color changes is being modulated and the chromaticity obviously changes. To clarify, it is well known that adjusting the amount of one of the primary colors will adjust the ratio of another color and that the range will vary between the primary colors, such as red and blue. Examiner asserts Official Notice to chromaticity diagrams/tristimulus graphs which show combinations of RGB, CYM (complements which follow the same principles), etc.

Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention that the variations of color combinations that are expressed by chromaticity diagrams would obviously be used with Struyk's display means with the motivation of KSR principles that is a well known technique in the art. Several other KSR principles can be applied here as well.

Struyk also does not explicitly teach of the liquid crystal layer having a retardation capability.

However, in liquid crystal displays, it is obvious, if not inherent, that the LCD layer is deformed (read as retarded) with respect to the molecules when a voltage is applied to it. Respectfully, this is standard in a liquid crystal display.

To emphasize, in the same field of endeavor, liquid crystal panels, Abileah teaches of using a retardation means in various areas of his disclosure. For example, please see the abstract where he summarizes and states that for each of the RGB subpixels, there is a retardation film for each subpixel. Furthermore, he discloses in Column 13, Lines 37-45, he at least suggests the LCD layer is applied with a voltage, thereby obviously, if not inherently, retarding the layer and the molecules in response to the application of voltage. Also, please note that Abileah's invention is a twisted nematic LCD, which are even more concerned with the deformation of the LCD layer than other types. Several KSR principles can be applied here, such as known technique (the retarding of the LCD layer is well known when applying voltages to effect color changes in the pixels), simple substitution of parts (being able to implement a known driving technique with destroying the combination), teaching/suggestion/motivation in the prior arts (the retardation suggestions by Abileah), etc.

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to use the retardation technique to the layer, as taught by Abileah, with Struyk's invention, with the

motivation of the KSR principles above and that by doing so, color leakages can be eliminated, resulting in a better image, (Abileah, Column 18, Lines 1-13).

Struyk and Abileah teach in Claim 4:

The color display element according to claim 1, wherein a voltage making the light passing through the liquid crystal layer assume magenta is applied to the first sub-pixel **([0102] and [0118] describe green/magenta complementary pairs of filters. As for the passing between red and blue, this is obvious and discussed above)**, and a voltage making the light passing through the liquid crystal layer assume s a maximum brightness of green is applied to the second sub-pixel, whereby the unit pixel displays white color. **(The language "variable" is broad and varying amount of voltage applied would change the color intensity. [0025] discloses complementary colors mixed with each other will result in a shade of white and this is also obvious given the concept of complementary colors. [0118] discloses green/magenta filter pairs)**

Struyk teaches in Claim 5:

The color display element according to claim 1, wherein the first sub-pixel has a magenta color filter **([0118] discloses green/magenta filter pairs (read magenta color filter as the first sub-pixel and green as the second sub-pixel) and these colors are complementary)**

Struyk teaches in Claim 7:

The color display element according to claim 5, wherein a voltage in the range within which the chromatic color changes is applied to the first sub-pixel, to display a color as a result of overlapping the chromatic color and a color of the magenta color filter with each other. **(The obviousness statement made in Claim 1 and the reasoning there is applicable here as well, with regards to the chromaticity diagrams and adjusting the ratios being well known. The language "to display a color" is broad and by applying voltages to the various sub-pixels, a color can be displayed. It is well known that complementary colors overlap each other, [0102])**

Struyk teaches in Claim 8:

The color display element according to claim 5, wherein a voltage making the lights passing through the liquid crystal layers have a maximum brightness in the range within which a brightness of the light is variable is applied to the first and second sub-pixels, whereby the unit pixel displays white color. **([0051], [0061] discloses the maximum intensity value of any individual color component and there is inherently a maximum gray scale that can be reached)**

Struyk teaches in Claim 9:

The color display element according to claim 5, wherein modulations of a same gray level in the range within which a brightness of the light is variable are applied to the first and second sub-pixels respectively, whereby an achromatic color of half tone is displayed in the unit

pixel. **([0025], [0043], etc disclose achromatic colors such as white and black which can be displayed)**

Struyk teaches in Claim 21:

A method for driving a color display element which contains an optical property of which changes in accordance with an applied voltage, the color display element being comprised of a unit pixel comprised of a plurality of sub-pixels comprising a first sub-pixel and a second sub-pixel **([0042]-[0044] disclose sub-pixel structures which are composed of different colors and the color variances within each pixel)**, the second sub-pixel having a green color filter **([0042], [0084] and [0085] disclose green color filters)**, which comprises the steps of:

applying to the first sub-pixel a voltage modulating an optical property in a range within which a brightness of light passing through is variable **(As discussed above, various voltage levels are applied to each of the sub-pixels and by doing so, the optical property, i.e. color intensity, is modulated or changed. This is well known in the art and as a result, the brightness is altered. [0118] discloses green/magenta filter pairs (read magenta color filter as the first sub-pixel) and these colors are complementary)** and

applying to the second sub-pixel a voltage modulating an optical property in a range within a brightness of light passing through is variable **(Figures 3A, 3B and 4 and [0063]-[0065] disclose the voltage applied to each of the colors within the pixel. The application of voltages to the sub-pixels is respectfully, obvious. The language "variable" is broad and varying amount of voltage applied would change the color intensity)**; but

Struyk does not explicitly teach "in a range within which a chromatic color assumed by light passing through the medium changes within red and blue."

However, chromaticity relationships between RGB colors is well known in the art and the relationship is shown by chromaticity diagrams. The color combinations are altered as one of the color changes is being modulated and the chromaticity obviously changes. To clarify, it is well known that adjusting the amount of one of the primary colors will adjust the ratio of another color and that the range will vary between the primary colors, such as red and blue. Examiner asserts Official Notice to chromaticity diagrams/tristimulus graphs which show combinations of RGB, CYM (complements which follow the same principles), etc.

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Response to Arguments

6. Applicant's arguments considered, but are respectfully considered to be moot in grounds of new rejection(s).

The previous rejection has been removed and a new one has been issued due to the latest amendments. Examiner feels the retardation of the liquid crystal layer is obvious in the art, if not inherent. Respectfully, this is how these types of displays works, by bending the molecules in the LCD layer upon application of voltages to the pixels. The Abileah reference has been combined to reinforce this teaching and this reference is in the same field of endeavor of LCDs, and in particular, a twisted nematic LCD which are often more concerned with the layer deformation part. As a result, Applicant's arguments on this are considered to be moot.

Conclusions

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS P. JOSEPH whose telephone number is (571)270-1459. The examiner can normally be reached on Monday-Friday, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629